

## **PUBLIC ABSTRACT**

### **Internal Corrosion Direct Assessment (ICDA) of Gas Transmission, Gathering, and Storage Systems**

The total cost of corrosion of all pipelines through internal corrosion has been estimated to range from \$50 million to \$100 million per year. The proposed project seeks to develop and validate a method to assess the integrity of pipelines with respect to internal corrosion by identifying and prioritizing locations of corrosion damage. The final product will be applicable to both dry and wet gas lines, including those lines that cannot be inspected using inline inspection (ILI) tools.

A dry gas ICDA method was developed previously that compares the slope of a pipe segment in the direction of gas flow to a critical slope for water hold-up. The existence of corrosion at those locations can serve as representative worst case locations and provide information about the overall pipeline integrity with respect to internal corrosion. In the third quarter of the project, the dry gas ICDA methodology was validated against pipeline inspection data from four companies. For three of the four companies, ICDA was able to identify the majority of the anomalies found by ILI. For one company, the ICDA identification of significant internal corrosion sites was poor. This is attributed to the poor quality of the pipeline elevation data for this company and points to the need to gather accurate pipeline elevation profile in order to perform accurate ICDA.

Gas gathering and storage systems often carry wet gas and liquid (i.e., ‘free’) water, so the present ICDA method developed for dry gas is not applicable. A methodology for identifying the locations of most probable corrosion is being developed. An example probabilistic analysis was performed assuming three corrosion models, an assumed pipeline elevation profile, and flow parameters. Wet gas internal corrosion data from operating pipeline companies will be collected to develop a more complete ICDA methodology for wet gas systems.

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